Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Stinson Creek

Waterbody Segment at a Glance:

County: Callaway
Nearby Cities: Fulton
Length of impairment: 0.1 miles
Pollutants: Biochemical Oxygen Demand (BOD) and Volatile Suspended Solids (VSS)
Source: Fulton Wastewater Treatment Plant (WWTP)


State map showing location of watershed

Propose to change the pollutant NFR to VSS on the 2002 303(d) list

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Stinson Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption

Use that is impaired

- Protection of Warm Water Aquatic Life

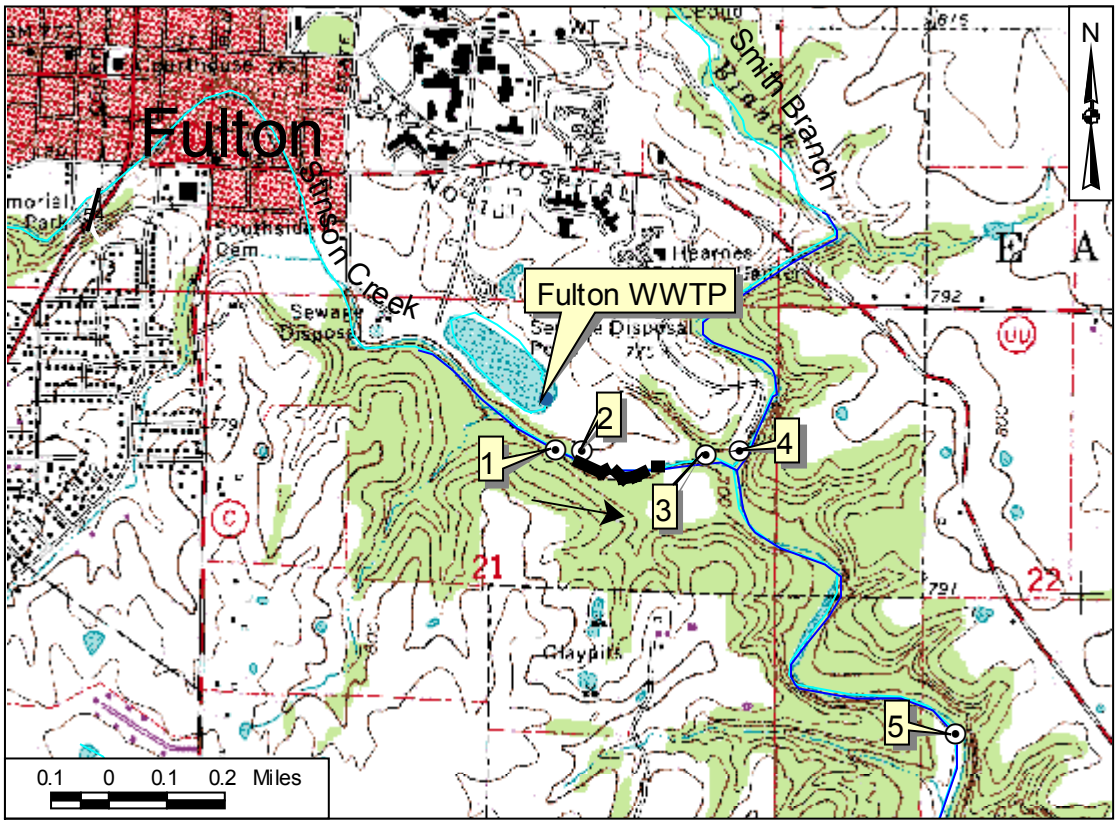
Standards that apply

- The Missouri Water Quality Standard, found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million).
- Standards for Volatile Suspended Solids may be found in the general criteria section of the WQS, 10 CSR 20-7.031(3) where it states:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Any waterbody that was listed for Non-Filterable Residue (NFR) in 1998 is now being listed as Volatile Suspended Solids (VSS). The listing gives a clearer picture of the specific sources contributing to the impairment. VSS are organic solids coming from wastewater treatment plants.

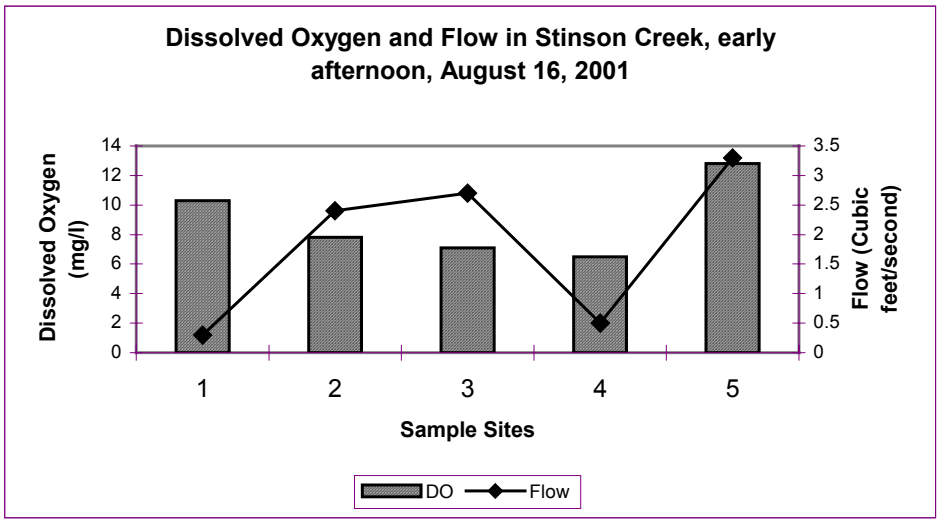
Water quality studies conducted on Stinson Creek from 1988 – 1999 have at times shown heavy deposits of solids and lower levels of dissolved oxygen below the discharge from the Fulton WWTP. Wastewater that is high in BOD (Biochemical Oxygen Demand) lowers the dissolved oxygen in a stream. Many aquatic organisms require high levels of oxygen to survive. VSS refer to particles that are suspended in water, like algae, or those that settle out, like the sewage sludge in Stinson Creek. When these solids settle to the bottom of a stream, they smother the streambed and fill in important habitat for aquatic invertebrates and fish. Water quality data collected in the summer of 2001 is shown in the graphs on page 3. The aquatic life observed at that time was of the pollution-intolerant type that needs clean water and relatively high oxygen levels. This indicates that the water in Stinson Creek is now of high enough quality to support sensitive aquatic life. Another low flow study is planned to bolster the data.

Stinson Creek in Callaway County, Missouri, with Sampling Sites

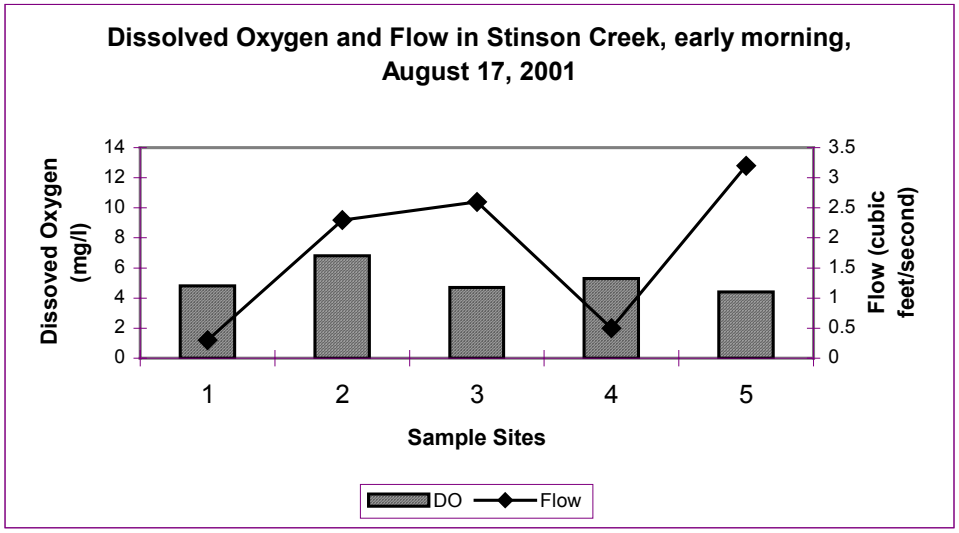


Sample Site Index

1 – Stinson Creek above Fulton WWTP discharge
2 – Fulton WWTP Effluent
3 – Stinson Creek above Smith Branch
4 – Smith Branch near mouth
5 – Stinson Creek below Smith Branch



Source: Missouri Department of Natural Resources



Source: Missouri Department of Natural Resources

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